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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/873,373	06/05/2001	Wilhelm Reiter	033275-225	5771

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BURNS DOANE SWECKER & MATHIS L L P
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER

KIM, TAE JUN

ART UNIT	PAPER NUMBER
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3746

DATE MAILED: 05/21/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/873,373

Applicant(s)

REITER ET AL.

Examiner

Ted Kim

Art Unit

3746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6, 9. 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 22 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Regarding claim 22, the phrase "particularly" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "or the like"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

5. Claims 14, 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Kobayashi et al (6,253,554). Kobayashi et al teach a gas turbine system (note that there are many applicable embodiments, see Figs. 6 and 8 for the broadest applied

Art Unit: 3746

embodiments) comprising a compressor 8 that compresses air to compressor end air that is available on the outlet side, a combustor, a turbine, first cooling lines 28 (see Fig. 6) in which process compressed air is removed from the compressor, is fed as cooling air for cooling inside an internal cooling channel 31a, 31b through thermally loaded components of the combustor and/or turbine, second cooling lines 32 from which cooling air from the components back to the compressor 8, wherein, in the manner of targeted leakage, a small part of the cooling air is fed for film cooling into the turbine stream through drilled film cooling openings provided on the components. Kobayashi et al specifically teach the cooling system recovers only a part of the cooling air (col. 15, lines 48-col. 6, line 14), i.e. some of the cooling air is injected into the high pressure sections (compare with Fig. 7 for example). As is well known in the gas turbine cooling art, this is inherently film cooled.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-8, 10-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 98/13584 (see US equivalent 6,305,155 for translation and all relevant citations) in view of Fukue et al (6,065,282). WO '584 teaches a method for cooling a gas turbine

Art Unit: 3746

system comprising a compressor 6 that compresses air to compressor end air 18 that is available on the outlet side, a combustor 20, a turbine 10, in which process compressed air 19 is removed from the compressor, is fed as cooling air for cooling inside an internal cooling channel LA through thermally loaded components of the combustor and/or turbine, wherein, in the manner of targeted leakage, a small part of the cooling air is fed for film cooling into the turbine stream through drilled film cooling openings 15 provided on the components. WO '584 does not teach the compressed air after cooling is compressed and then added to the compressor air. Fukue et al teach that it is old and well known in the art to take the cooling air 35 after it has cooled turbine components and compress it in 36 prior to returning the cooling air to the compressor. It would have been obvious to one of ordinary skill in the art to employ a booster compressor, as taught by Fukue et al, and return the cooling air to the compressor, in order to enhance the overall system efficiency and/or power output and/or better control the cooling flow rates. It is noted that Fukue et al teach in an alternative embodiment (Fig. 1) to cool the cooling air in heat exchanger 3, prior to compression in 4. It would have been obvious to one of ordinary skill in the art to use a heat exchanger to cooling the air, as taught by Fukue, in order to increase compressor and/or cycle efficiency. As for using injected water to cool the cooling air, using water injection to cool an air flow is notoriously old and well known in the art and it would have been obvious to do, in order to cool the fluid and also increase the density of the fluid and thus the power output from the combined cycle. As for using an additional heat exchanger in the second cooling line, this is deemed an

Art Unit: 3746

obvious matter of making plural, as Fukue et al clearly teach a heat exchanger in that claimed line. It would have been obvious to one of ordinary skill in the art to employ an additional heat exchanger in the second line, in order to further cool the air.

8. Claims 9, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 98/13584 (see US equivalent 6,305,155 for translation and all relevant citations) in view of Fukue et al (6,065,282), as applied above, and further in view of Koch et al (5,581,996). WO '584 teaches various aspects of the claimed invention do not teach the heat exchanger in the first cooling line. Koch et al teach taking compressor end air 58a in a first cooling line, cool the air in heat exchanger 44, and use the cooled air 58b to cool gas turbine components with film cooling. It would have been obvious to one of ordinary skill in the art to use a heat exchanger and film cool the first cooling line, as taught by Koch, in order to enhance the cooling effectiveness. As for using injected water to cool the cooling air, using water injection to cool an air flow is notoriously old and well known in the art and it would have been obvious to do, in order to cool the fluid and also increase the density of the fluid and thus the power output from the combined cycle.

9. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al (6,253,554) in view of Fukue et al (6,065,282) and Koch et al (5,581,996). Kobayashi et al teach a gas turbine system (note that there are many applicable embodiments, see Figs. 6 and 8 for the broadest applied embodiments) comprising a compressor 8 that compresses air to compressor end air that is available on the outlet side, a combustor, a turbine, first cooling lines 28 (see Fig. 6) in which process

Art Unit: 3746

compressed air is removed from the compressor, is fed as cooling air for cooling inside an internal cooling channel 31a, 31b through thermally loaded components of the combustor and/or turbine, second cooling lines 32 from which cooling air from the components back to the compressor 8, wherein, in the manner of targeted leakage, a small part of the cooling air is fed for film cooling into the turbine stream through drilled film cooling openings provided on the components. Kobayashi et al specifically teach the cooling system recovers only a part of the cooling air (col. 15, lines 48-col. 6, line 14), i.e. some of the cooling air is injected into the high pressure sections (compare with Fig. 7 for example). As is well known in the gas turbine cooling art, this is inherently film cooled. Kobayashi et al do not teach the heat exchanger in the first cooling line. Koch et al teach taking compressor end air 58a in a first cooling line, cool the air in heat exchanger 44, and use the cooled air 58b to cool gas turbine components with film cooling. It would have been obvious to one of ordinary skill in the art to use a heat exchanger and film cool the first cooling line, as taught by Koch, in order to enhance the cooling effectiveness. As for using injected water to cool the cooling air, using water injection to cool an air flow is notoriously old and well known in the art and it would have been obvious to do, in order to cool the fluid and also increase the density of the fluid and thus the power output from the combined cycle. As for using an additional heat exchanger in the second cooling line, this is deemed an obvious matter of making plural, as Fukue et al clearly teach a heat exchanger in that claimed line. It would have been

Art Unit: 3746

obvious to one of ordinary skill in the art to employ an additional heat exchanger in the second line, in order to further cool the air.

Contact Information

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Ted Kim whose telephone number is 703-308-2631. The Examiner can be reached on regular business hours before 5:00 pm, Monday to Thursday and every other Friday.

The fax numbers for the organization where this application is assigned are 703-872-9302 for Regular faxes and 703-872-9303 for After Final faxes.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Thorpe, can be reached on 703-308-0102.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist of Technology Center 3700, whose telephone number is 703-308-0861.

General inquiries can also be directed to Technology Center Customer Service Office at 703-306-5648 or the Patents Assistance Center whose telephone number is 800-786-9199. Furthermore, a variety of online resources are available at

<http://www.uspto.gov/main/patents.htm>



Ted Kim

Telephone

703-308-2631

Art Unit: 3746

Primary Examiner

Fax (Regular) 703-872-9302

May 20, 2002

Fax (After Final) 703-872-9303

Technology Center 3700 Receptionist

Telephone 703-308-0861

Technology Center 3700 Customer Service

Telephone 703-306-5648

Patents Assistance Center

Telephone 800-786-9199